

Site 5049



Tennessee Department of Environment and Conservation

Division of Water Pollution Control

6th Floor Annex, L&C Tower, 401 Church Street, Nashville, Tennessee 37243

1-888-891-8332 (TDEC)

Notice of Intent (NOI) of Coverage Under the Pesticide General Permit (PGP)

Submission of this completed Notice of Intent (NOI) constitutes notice that the Operator identified in Section B intends to be authorized to discharge pollutants to waters of the state within the pest management area identified in Section C of the Pesticide General Permit (PGP). Submission of this NOI constitutes notice that the party identified in Section B of this form has read, understands, and meets the eligibility conditions of Part 1 of the permit; agrees to comply with all applicable terms and conditions of the permit; and understands that continued authorization under the permit is contingent on maintaining eligibility for coverage. To be granted coverage, all information required on this form must be completed. Please read and make sure you comply with all permit requirements, including the requirement for large entities to prepare a Pesticide Discharge Management Plan (PDMP) prior to NOI submittal. Refer to the instructions at the end of this form to complete your NOI.

A. Notice of Intent Status

1. Mark whether this is the first time you are requesting coverage under the PGP or if this is a change of information for a discharge already covered under the PGP. If this is a change of information, supply the NPDES permit tracking number for the discharge.

a. ☒ Original NOI Submission

b. ☐ NOI Change of Information: TNP 100000 (NPDES Permit Tracking Number)

Please note: When selecting A.1.b please fill out Section B (Operator Name and Mailing Address) and the fields of the NOI that need to be modified.

B. Operator Information

1. Operator Name: Town of Somerville

2. Operator Type (check one):

a. ☐ Federal government

b. ☐ State government

c. ☒ Local government

d. ☐ Mosquito control district (or similar)

e. ☐ Irrigation control district (or similar)

f. ☐ Weed control district (or similar)

g. ☐ Other: If other, provide brief description of type of operator: _____

3. Are you a large entity as defined in Appendix A of the permit? (check one):

☒ Yes ☐ No

Please note: If you answer "Yes" to this question you are required to develop a Pesticide Discharge Management Plan (PDMP) and submit an Annual Report reflecting all pesticide uses for which you are requesting permit coverage under this NOI.

4. Mailing Address:

a. Street: 13085 N. Main Street

b. City: Somerville

c. State: TN

d. ZIP Code: 38068

e. Telephone: 901 - 465 - 9500 Ext _____

f. Fax: 901 - 465 - 7320

g. Contact Name: Austin Edmondson, Jr.

h. E-mail: cityadmsom@bellsouth.net

C. Pest Management Areas: Complete Section C for each Pest Management Area for which coverage under Pesticide General Permit is desired.

Pest Management Area # 1 of ## 1

1. Pest Management Area Name: Town of Somerville

Provide a map of the location of the Pest Management Area (attach map) or describe the location of the Pest Management Area in detail.

See attached map.

2. Are any of your activities (in this pest management area) for which you are requesting coverage under this NOI occurring on areas considered "federal facilities" as defined by the permit? ☐ Yes ☒ No

3. Mailing address and contact information of the pesticide applicator (or check here ☐ if same as provided in Section B):

a. Street: 13085 N. Main Street

b. City: Somerville

c. State: TN

d. ZIP Code: 38068

e. Telephone: 901 - 465 - 9500 Ext

f. Fax: 901 - 465 - 7320

g. Contact Name: Austin Edmondson, Jr.

h. E-mail: cityadmsom@bellsouth.net

4. Pesticide Use Patterns to be included in this Pest Management Area (check all that apply):

a. ☒ Mosquito and Other Flying Insect Pest Control

c. ☐ Animal Pest Control

b. ☐ Weed and Algae Pest Control

d. ☐ Forest Canopy Pest Control

5. Receiving Waters (check one):

a. ☒ Coverage requested for all waters of the state within the Pest Management Area identified above.

b. ☐ Coverage requested specifically for the following waters of the state within the Pest Management Area identified above.

c. ☐ Coverage requested for all waters of the state within the Pest Management Area identified above except for:

6. Outstanding National Resource Waters (ONRWs)

Is coverage requested for discharge to a Outstanding National Resource Water(s) of the United States? ☐ Yes ☒ No

If yes, answer a and b:

a. Name of ONRWs: _____

b. Provide rationale for determination that pesticide discharge is necessary to protect water quality, the environment, and/or public health and that any such discharge will not degrade water quality or will degrade water quality only on a short-term or temporary basis:

7. Water Quality Impaired Waters

Operators are not eligible for coverage under this permit for any discharges from a pesticide application to waters of the state if the waters are identified as impaired by a substance which is either an active ingredient of the pesticide designated for use or is a product of degradation of such an active ingredient. See Part 1.1.2.1 of the permit. Check one:

a. ☒ Waters are NOT impaired by any substance which is either an active ingredient of a pesticide to be discharged or a product of degradation of such an active ingredient

b. ☐ Waters are on a current state list as being impaired by a substance which is either an active ingredient of a pesticide to be discharged or a product of degradation of such an active ingredient; however, evidence is attached documenting that the waters are no longer impaired.

D. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. On the basis of my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. A false statement is subject to the penalties of perjury.

Printed Name: Austin Edmondson, Jr.

Title: City Administrator

E-Mail: cityadmsom@bellsouth.net

Signature/Responsible Official: 

Date: 04/16/2012

NOI Preparer (Complete if NOI was prepared by someone other than the certifier)

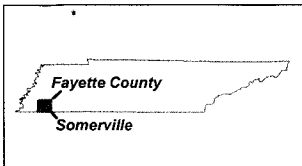
Preparer Name: Daniel Markowski, PhD

Organization: Vector Disease Control International

Phone: 800 - 413 - 4445 Ext

Date: 04/16/2012

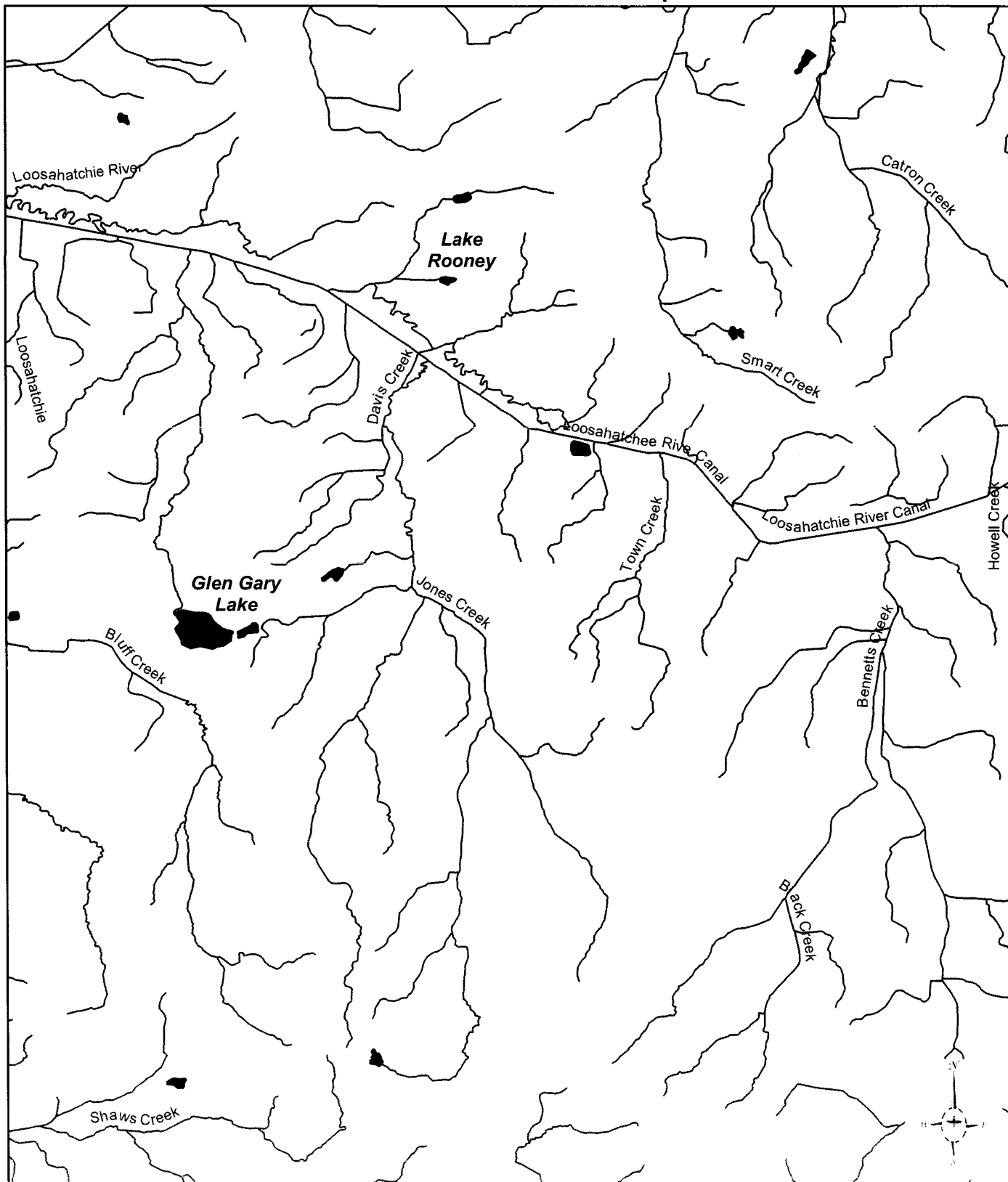
E-Mail: dmarkowski@vdcil.net



Somerville, Tennessee

Fayette County, TN
General Location Map

Somerville, TN



Vector Disease Control
1320 Brookwood Dr., Suite H
Little Rock, AR 72202

0 0.5 1 2 Miles

These map products were developed for use by VDCI for its internal purposes only and were not designed or intended for general use by members of the public. VDCI makes no representation or warranty as to its accuracy, timeliness, or completeness, and in particular, its accuracy in labeling or displaying dimensions, contours, property boundaries, or placement or location of any map features thereon. © 2012 VDCI. All rights reserved.

Pesticide Discharge Management Plan



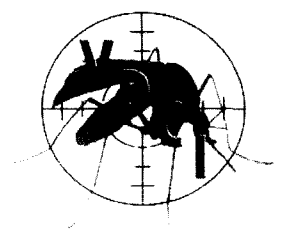
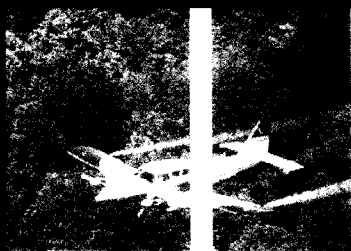
Vector Disease Control International

65 Peden Road
Marion, AR 72364

Preparation Date:

March 12, 2012

Global Leaders in Mosquito Control



Pesticide Discharge Management Plan (PDMP)

Introduction

Historically, pesticide applications have been regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA covers the production, labeling, use and safety of pesticides, but how pesticides were being applied became a point of contention. Beginning in 2001, several lawsuits sought to determine whether the Clean Water Act covered pesticide applications. Most courts found that the Clean Water Act did apply. However, a minority of courts found that applying pesticides did not require an NPDES permit.

In the wake of this legal uncertainty and liability exposure, the EPA issued a final rule in 2006 that exempted pesticide applications to control pests in or near water from Clean Water Act regulation so long as the pesticides were FIFRA-compliant.

This 2006 rule was quickly challenged, and the Sixth Circuit Court of Appeals vacated the rule in *National Cotton Council of America v. EPA*. Following this decision, on April 9, 2009 the EPA requested a two-year stay to develop an NPDES pesticide permit program. That stay was granted on June 8, 2009. On April 9, 2011, NPDES permits were to be required for all point source discharges to waters of the United States of biological pesticides, and chemical pesticides that leave a residue. However, a second stay until October 31, 2011 was granted on March 28, 2011. Finally, as of October 31, 2011, an NPDES Pesticide General Permit (PGP) is required for the discharge of biological and chemical pesticides to waters of the US.

The PGP applies only to four enumerated categories of pest control activities:

1. Mosquito and other flying insect pest control
2. Aquatic weed and algae control
3. Aquatic nuisance animal control
4. Forest canopy pest control

For mosquito control operations, the PGP, and the requirement to file a Notice of Intent (NOI), is limited to those applicators and operators that treat at least 6,400 acres per year. In most states, the NOI must be submitted 10 days or more before exceeding this threshold amounts. While operators who do not meet this threshold amount need not submit an NOI, they are still subject to the requirements contained in the PGP.

The PGP also requires operators to prepare a Pesticide Discharge Management Plan (PDMP) to document how the operator will comply with the PGP. The PDMP must indicate who is in charge of pesticide management and application controls, what measures will be implemented to meet effluent limitations, and what other actions will be taken to minimize discharges. Any updates or changes in the PDMP, however, must be documented and records retained.

A key component of the PGP requires operators to engage in both technology-based effluent limitations and water-quality based effluent limitations. To meet the technology-based limitations in the permit, our operators will: (1) use only the amount of pesticide and frequency of pesticide application necessary to control the target pest; (2) perform regular maintenance activities to reduce leaks, spills and unintended discharges; and (3) clean, calibrate and maintain application equipment on a regular basis. Additionally, all

control actions must follow all appropriate integrated mosquito management (IMM) practices. The IMM practices as described in the current PGP involve identifying pests, addressing effective management of the identified pests, and following specified procedures for pesticide application. The water-quality based effluent limitations in the PGP require that the operator meet applicable state water quality standards. The expectation is that if an operator follows the permit's technology-based effluent limitations, there will be no violation of applicable water quality standards.

The PGP regulates operators, that is, those persons responsible for achieving permit compliance. The operator is, generally, the party operating and controlling the application of pesticides, and includes those persons or entities with the ability to control the financing or decision-making on how to control pests and where and how that control is applied. Operators also include the entity with the day-to-day control over those activities necessary to comply with the permit. As the primary entity responsible for daily mosquito control practices of the City of Somerville's Mosquito Abatement Program within Fayette County, TN, Vector Disease Control International (VDCI) is considered the operator in this PDMP.

PMPD Preparation Date:

03 / 12 / 2012

PDMP Contact(s):

Vector Disease Control International
Daniel Markowski, PhD
1320 Brookwood Dr, Suite H
Little Rock, AR 72202
800-413-4445
dmarkowski@vdc.net

Vector Disease Control International
Ernest English
65 Peden Road
Marion, AR 72364
800-413-4445
westmemphis@vdc.net

City of Somerville
Austin Edmondson, Jr., City Administrator
13085 N. Main St.
Somerville, TN 38068
901-465-9500
cityadmsom@bellsouth.net

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SECTION 1: Operator Information

1. Brief description of the Pest Management Area(s).

The Pest Management Area covered by this PDMP includes areas over and adjacent to constructed conveyances, surface waters and other waters of the State of Tennessee in Fayette County, primarily including high water mark areas within the City of Somerville as illustrated by the General Location Map, Attachment A.

2. The Pesticide Use Pattern(s) for this Pest Management Area that triggers the requirement to develop a Pesticide Discharge Management Plan. (check all that apply).

- | | |
|---|---|
| a. <input checked="" type="checkbox"/> Mosquitoes and Other Flying Insect Pests | c. <input type="checkbox"/> Animal Pests |
| b. <input type="checkbox"/> Weeds and Algae | d. <input type="checkbox"/> Forest Canopy Pests |

3. Operator Type (check one):

- a. ☐ Federal Government
- b. ☐ State Government
- c. ☐ Local Government
- d. ☐ Mosquito control district (or similar)
- e. ☐ Irrigation control district (or similar)
- f. ☐ Weed control district (or similar)
- g. ☒ Other: If other, provide brief description of type of Operator:

For-hire Operator/Applicator for the City of Somerville

SECTION 2: PDMP Team

1. **Person(s) Responsible for Managing Pests:** *Any entity with control over the decision to perform pesticide applications including the ability to modify those decisions.*

Company or Organization Name: Vector Disease Control International, LLC

Name: Earnest English

Address: 65 Peden Road

City, State, Zip Code: Marion, AR 72364

Telephone Number: 800-413-4445

Email address: westmemphis@vdcnet.net

Fax number: 866-839-8595

Area of Control (if more than one Operator at site): Primary Operational Decision Maker

Company or Organization Name: Vector Disease Control International, LLC

Name: Daniel Markowski, PhD

Address: 1320 Brookwood Dr. Suite H

City, State, Zip Code: Little Rock, Arkansas 72202

Telephone Number: 800-413-4445

Email Address: dmarkowski@vdcnet.net

Fax Number: 866-839-8595

Area of Control (if more than one Operator at site): VDCI's Director of NPDES Compliance

Company or Organization Name: City of Somerville

Name: Austin Edmondson, Jr., City Administrator

Address: 13085 North Main Street

City, State, Zip Code: Somerville, TN 38068

Telephone Number: 901-465-9500

Email Address: cityadmsom@bellsouth.net

Fax Number: 901-465-7320

Area of Control (if more than one Operator at site): Somerville Administrative Decision Maker

2. **Person(s) responsible for developing and revising the PDMP:**

Company or Organization Name: Vector Disease Control International, LLC

Name: Daniel Markowski, PhD

Address: 1320 Brookwood Dr. Suite H

City, State, Zip Code: Little Rock, Arkansas 72202

Telephone Number: 800-413-4445

Email Address: dmarkowski@vdcnet

Fax Number: 866-839-8595

Area of Control (if more than one Operator at site): VDCI's Director of NPDES Compliance

3. Person(s) Responsible for developing, revising, and implementing corrective actions and other effluent limitation requirements:

Company or Organization Name: Vector Disease Control International, LLC

Name: Daniel Markowski, PhD

Address: 1320 Brookwood Dr. Suite H

City, State, Zip Code: Little Rock, Arkansas 72202

Telephone Number: 800-413-4445

Email Address: dmarkowski@vdcnet

Fax Number: 866-839-8595

Area of Control (if more than one Operator at site): VDCI's Director of NPDES Compliance

Company or Organization Name: Vector Disease Control International, LLC

Name: Earnest English

Address: 65 Peden Road

City, State, Zip Code: Marion, AR 72364

Telephone Number: 800-413-4445

Email address: westmemphis@vdcnet

Fax Number: 866-839-8595

Area of Control (if more than one Operator at site): Primary Operational Decision Maker

4. Person(s) responsible for pesticide applications:

Company or Organization Name: Vector Disease Control International, LLC

Name: Earnest English

Address: 65 Peden Road

City, State, Zip Code: Marion, AR 72364

Telephone Number: 800-413-4445

Email address: westmemphis@vdcnet

Fax number: 866-839-8595

Area of Control (if more than one Operator at site): Primary Operational Decision Maker

**Note: The Program hires seasonal, part-time applicators which change from year to year throughout the active mosquito-breeding season. Each year, the list of seasonal applicators will be updated and a copy maintained, on file, with the PDMP.*

Team Member Name(s)	Individual Responsibilities
English, Ernest	Program Manager and Pesticide Applicator (Lic. #83746)
New, Kris	Pesticide Applicator (Lic. #83664)

SECTION 3: Problem Identification

3.1 Pest Problem Description

While 49 species of mosquitoes have been identified in the state of Tennessee, VDCI anticipates at least thirteen (13) species, listed in the table below, may occur within the Pest Management Area in quantities high enough to warrant control measures. This list will be reviewed annually, prior to the first pesticide application each calendar year, and any changes will be appropriately documented, as detailed in Section 8: PDMP Modifications.

Summary of Pest Problem

Target Pest(s)	Source of the Pest Problem	Data Source (e.g. survey conducted in 2011)
<i>Aedes albopictus</i>	Natural/Artificial Containers	Historic Surveillance and Control Program Data
<i>Aedes vexans</i>	Temporary Floodwater	Historic Surveillance and Control Program Data
<i>Anopheles punctipennis</i>	Permanent Water	Historic Surveillance and Control Program Data
<i>Anopheles quadrimaculatus</i>	Permanent Water	Historic Surveillance and Control Program Data
<i>Coquillettidia perturbans</i>	Permanent Water	Historic Surveillance and Control Program Data
<i>Culex quinquefasciatus</i>	Permanent Water/Septic Water Habitats	Historic Surveillance and Control Program Data
<i>Culex restuans</i>	Permanent Water/Septic Water Habitats	Historic Surveillance and Control Program Data
<i>Ochlerotatus sticticus</i>	Temporary Floodwater	Historic Surveillance and Control Program Data
<i>Ochlerotatus triseriatus</i>	Tree Holes/Artificial Containers	Historic Surveillance and Control Program Data
<i>Psorophora ciliata</i>	Temporary Floodwater	Historic Surveillance and Control Program Data
<i>Psorophora columbiae</i>	Permanent Water	Historic Surveillance and Control Program Data
<i>Psorophora ferox</i>	Temporary Floodwater	Historic Surveillance and Control Program Data
<i>Psorophora howardii</i>	Temporary Floodwater	Historic Surveillance and Control Program Data

The following mosquito species are of primary concern within the Pest Management Area.

Aedes albopictus has been proven to be a severe nuisance species and will certainly become an unwanted pest once it becomes firmly established in an area. The mosquito is known to be an efficient vector of dengue fever but it has yet to be implicated in the transmission of other local disease agents such as WNV. *Aedes albopictus* larvae can be found in a variety artificial containers and, as a voracious day-time biter, can be a primary species of concern for pest control strategies.

Aedes vexans is a common freshwater mosquito that has the potential to cause great nuisance based upon aggressive daytime and crepuscular biting and potentially explosive populations. This mosquito has not definitively been documented as a vector of disease but has been implicated as a secondary vector of Eastern Equine Encephalitis (EEE) and dog heartworm. *Ae. vexans* is usually the predominant and most abundant nuisance mosquito in the Pest Management Area. As such, they are a primary species of concern for pest control strategies.

Anopheles punctipennis larvae can live in a wide variety of habitats but prefer cool permanent pools, ponds and swamps. They are generally the first *Anopheles* to appear in the spring but can be found throughout the breeding season. *An. punctipennis* is not thought to be a natural vector of malaria; however, it is a vicious biter, and will readily enter homes to feed on people.

Anopheles quadrimaculatus overwinters as inseminated females. In the spring, eggs are laid singly on the surface of the water. Larvae are found in permanent water bodies which contain considerable emergent vegetation. Large mammals are the preferred hosts, but they will occasionally feed on birds and reptiles. This mosquito was the most important vector of malaria in the southeastern United States and today is a major host of the nematode that causes dog heartworm. Large populations are found in rice fields, reservoirs, lakes and rivers which makes this mosquito a significant pest of man and livestock within the Pest Management Area.

Coquilleltidia perturbans is a fairly large mosquito that is often associated with aquatic habitats containing cattails, *Typha spp.* It is generally considered a bridge vector of Eastern Equine Encephalitis (EEE) to mammals, but has also tested positive for WNV in the United States although it has not been proven to be an effective transmitter of WNV. It commonly takes blood meals from both bird and mammal species (including humans), is an aggressive biter, and can be locally abundant around its preferred habitat.

Culex quinquefasciatus is a permanent-water mosquito breeder typically found in high organically rich and polluted waters such as dairy pastures, sewage processing facilities and catch basins. *Culex pipiens* is an opportunistic feeder of both mammals and birds. This species is believed to be a primary vector of West Nile Virus (WNV) to humans in urban areas and likely plays an important maintenance role for WNV in wild birds. *Cx. quinquefasciatus* larvae are usually first detected in late May or early June, and populations can flourish throughout the mosquito season if not controlled.

Culex restuans are found in a variety of habitats including roadside ditches, polluted pools, and discarded tires and buckets. Like all species of *Culex*, they lay their eggs in rafts on the surface of the water. Adults are morphologically very similar to *Culex pipiens* and it can be difficult to

distinguish between the two species. Females preferably feed on birds but also, to some extent, on mammals, including man. *Cx. restuans* has been implicated as natural enzootic vector of West Nile Virus and Eastern equine encephalitis virus.

Ochlerotatus sticticus is a rare mosquito, although the species can be abundant along river flood lands especially in the early spring. They are found mostly in pools in river plain woodlands and open country, but they also occur in nearby rain-filled pools containing dead leaves or other organic matter. The females are persistent biters, attacking during daylight hours and in early evening in woodlands and thickets near their breeding places. However, they are most active after sundown and the first thing in the morning. This species is an occasional early season nuisance pest in the Pest Management Area.

Ochlerotatus triseriatus breeds in a wide variety of natural and artificial containers and can have several generations per year. Suitable breeding sites for this species include holes in trees, rain barrels, cans, buckets and tires. Females feed in the morning and early evening. *Oc. triseriatus* seems to be indiscriminate in its feeding habits, feeding on mammals, birds, reptiles and amphibians. As a primary nuisance species and vector of La Crosse encephalitis virus, *Oc. triseriatus* can be a significant pest problem in the Pest Management Area

Psorophora ciliata is one of the largest mosquito species in the United States and its vicious bite makes this species a very annoying mosquito. Females are very large, brownish-yellow, and have a flight range of 1-2 miles. Larvae are found in temporary pools, fields and ditches, and feed on other insects including other mosquito larvae. After major rainfall events this species can be a significant pest problem in the Pest Management Area.

Psorophora columbiae is a very large dark mosquito. The larvae develop in temporary shallow freshwater pools and puddles where there is vegetation. Ideal sites for production of larvae are rice fields, grassy roadside ditches, and grassy swales. The normal flight range of this mosquito is at least 6-8 miles. The females are furious biters in day or night. Well documented studies have shown severe losses in weight gain and milk production resulting from the bloodfeeding activity of this mosquito making it a major pest problem in the Pest Management Area.

Psorophora ferox is commonly referred to as the "White-footed mosquito". *Ps. ferox* larvae occur in temporary rain-filled woodland pools, particularly in or near wooded areas as well as floodplains. The females are ferocious biters, even attacking during daylight hours on cloudy days. This mosquito is particularly troublesome to individuals living near woodland pool habitats. *Ps. ferox* is considered to be of high importance within the Pests Management Area because of its strong nuisance potential.

Psorophora howardii larvae found in un-shaded or partly shaded temporary rain-filled pools and are predacious, feeding on larvae of other mosquitoes with which they are associated. The adult females are very large mosquitoes and persistent biters. They have a flight range is 1 to 2 miles and will attack any time during the day when they are disturbed. This mosquito is considered major pest problem in the Pest Management Area.

The following larval mosquito habitats (sources) occur in the Pest Management Area and will be inspected regularly and mapped into a GIS database using GPS technology by the Program.

Permanent Water sites, including semi-permanent sites, consist of habitat that remains inundated for an extended period of time. Examples of these sites would be lakes, rivers, retention ponds, swamps, marshes, etc. Primary Pest Species: *Anopheles punctipennis*, *Anopheles quadrimaculatus*, *Culex restuans*, *Culex quinquefasciatus*, *Coquillettidia perturbans*, *Psorophora columbiae*

Temporary Floodwater is standing water that may exist for short periods of time after high water or rainfall. Examples of this type of habitat include bottom lands, woodland pools, swales (low areas), irrigated farm lands, drainage ditches, and tire ruts. Primary Pest Species: *Aedes vexans*, *Ochlerotatus sticticus*, *Psorophora ciliata*, *Psorophora ferox*, *Psorophora howardii*

Artificial Containers/Tree Holes are considered one of the most troublesome problems faced by a mosquito control operation. Old tires, cans, bottles, buckets, cups, pet water bowls, birdbaths, gutters, livestock troughs, and swimming pools are some of the more common artificial containers. Primary Pest Species: *Aedes albopictus*, *Ochlerotatus triseriatus*

Catch Basin/Storm Drains occur throughout urban areas within the Pest Management Area and are capable of breeding numerous mosquito species. Of primary concern in these habitats is *Culex* mosquitoes, the primary vectors of West Nile virus. Although all catch basins may hold water at some point in time, not all catch basins are sites of prolific mosquito breeding. Improper drainage, poor design, and amount of rainfall can all contribute to the number of mosquitoes produced in catch basins. Primary Pest Species: *Culex restuans*, *Culex quinquefasciatus*

Septic Water Habitats occur when water holding areas become polluted with high levels of organic matter. Examples of this type habitat would include urban catch basins, oxidation ponds, ditches with sewage or septic discharge, and waste-water treatment plants. These are one of the most likely habitat types to receive pre-treatment with residual larvicides based on historical mosquito population data. Primary Pest Species: *Culex restuans*, *Culex quinquefasciatus*

3.2 Action Thresholds

An action threshold is a level of pest prevalence at which an operator takes action to reduce the pest population. To determine the appropriate action threshold(s), mosquito populations need to be counted or estimated in order to make scientific-based population-level management decisions. Typically, a combination of surveillance techniques are used to estimate adult and larval mosquito population sizes.

1. Below is a brief summary of the action thresholds for the primary pest species within the Pest Management Area.

Summary of Action Thresholds – By Species

Target Pests	Larval Surveillance	Adult Trap Surveillance	Adult Landing Rate
<i>Aedes albopictus</i>	1 larva/10 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Aedes vexans</i>	1 larva/10 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Anopheles punctipennis</i>	1 larva/40 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Anopheles quadrimaculatus</i>	1 larva/40 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Coquillettidia perturbans</i>	1 larva/40 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Culex quinquefasciatus</i>	1 larva/20 dips	≥15 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Culex restuans</i>	1 larva/20 dips	≥15 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Ochlerotatus sticticus</i>	1 larva/10 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Ochlerotatus triseriatus</i>	1 larva/10 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Psorophora ciliata</i>	1 larva/10 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Psorophora columbiae</i>	1 larva/40 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Psorophora ferox</i>	1 larva/10 dips	≥15 females per CDC or Gravid trap per night	≥10 females/10 minutes
<i>Psorophora howardii</i>	1 larva/10 dips	≥30 females per CDC or Gravid trap per night	≥10 females/10 minutes

Summary of Action Thresholds – General

In addition to the species specific thresholds listed in the table above, the following general thresholds will also be utilized within the Pest Management Area:

- Larvae of any *Anopheles* or *Coquillettidia* species: ≥ 0.025 larvae per dip
- Larvae of any *Culex* species: ≥ 0.05 larvae per dip
- Larvae of any *Aedes*, *Culiseta*, *Ochlerotatus*, *Psorophora*: ≥ 0.1 larvae per dip
- Larvae of any mosquito not listed above: ≥ 0.1 larvae per dip
- CDC light traps: ≥ 50 total female mosquitoes of any species combination per trap night
- Gravid traps: ≥ 50 total female mosquitoes of any species combination per trap night
- Landing Rates: ≥ 1 total female mosquitoes of any species combination per minute
- Disease Surveillance: Detection of mosquito borne disease within the Pest Management Area
- Service Requests: ≥ 5 service requests in a single control zone during a 1 week period, or ≥ 20 service requests from the entire Pest Management Area during a 1 week period

The above listed action thresholds for mosquito control operations were determined by evaluating the individual mosquito species' biology, behavior, disease vector risk and corresponding habitat, the historical surveillance data for the Pest Management Area, and local demographics and tolerance. These Action Thresholds will be reviewed annually, prior to the first pesticide application each calendar year, and any changes will be appropriately documented, as detailed in Section 8: PDMP Modifications.

3.3 General Location Map

VDCI intends to make public health pesticide applications to, over and adjacent to constructed conveyances, surface waters and other waters of the State of Tennessee in Fayette County, primarily including high water mark areas within the City of Somerville, for mosquito control purposes per the requirements of the General NPDES Permit for Discharges from the Application of Pesticide.

A copy of the general location map which identifies the geographic boundaries of the area to which this PDMP applies and the location of the waters of the State is included in Attachment A.

3.4 Water Quality Standards

There are two scenarios where it is believed the PGP may not be adequately protective of water quality standards and has excluded discharges in each of these scenarios. Of primary concern are any discharges from a pesticide application to waters of the US if the water is identified as impaired by a substance which either is an active ingredient in that pesticide or is a degradate of such an active ingredient. Also, any

discharges to Tier 3 Waters except for pesticide applications made to restore or maintain water quality or to protect public health or the environment that either do not degrade water quality or only degrade water quality on a short-term or temporary basis. Any Operator desiring to apply pesticides in either of these two scenarios is required to submit an application for an NPDES individual permit.

As per the State Water Quality Standards, there are no Tier 3 water bodies located in Pest Management Area nor are there any water bodies located in Pest Management Area that have been impaired by pesticides (or their degradates) used in the mosquito abatement program.

SECTION 4: Pest Management Options Evaluation

VDCI employs a fully inclusive and modern Integrated Mosquito Management (IMM) program to control target mosquito species found within the Pest Management Area. Only mosquitoes that impact public health, domesticated animal health, economic development and/or negatively affect human quality of life are the targeted pests of this IMM program. Integrated Mosquito Management is a comprehensive mosquito abatement strategy that utilizes all available mosquito control methods, singly or in combination, to exploit the known vulnerabilities of mosquitoes in order to reduce their numbers to tolerable levels while maintaining a quality environment. IMM does not emphasize mosquito elimination or eradication.

The following Pest Management Options may be utilized singly, or in combination, in order to gain the best control of the target pests (larval and adult mosquitoes), while maintaining minimal environmental impact and reducing discharges to waters of the United States. When evaluating these Pest Management Options in order to determine the most efficient and effective Pest Management Measures to implement, factors such as the impact to water quality and the environment, the impact on non-target organisms, efficacy, cost, public acceptance, pesticide resistance, weather patterns, and overall feasibility are all fully considered. These Pest Management Options will be reviewed annually, prior to the first pesticide application each calendar year, and any changes will be appropriately documented, as detailed in Section 8: PDMP Modifications.

– **No Action:** No action, or delayed action may be taken under the following circumstances:

1. Widespread or severe flooding within the Pest Management Area. When widespread and/or prolonged flooding occurs, it is generally more economical and environmental friendly to allow mosquito larvae to emerge and utilize adult control measures at a later time as necessary. Typically, these larval habitats cannot be treated quickly or effectively enough to prevent adult emergence, therefore adult control becomes the most practicable and sound option. Additionally, adult mosquitoes may migrate into the Pest Management Area from the surrounding regions that have little or no mosquito control resources.
2. Rapidly Drying Environmental Conditions. No action may also be taken when standing water containing larvae are shallow and weather forecasts indicate hot, dry conditions. Such situations often allow larval habitat to dry before mosquitoes can complete their aquatic life stages, resulting in no adult emergence. In such cases the most cost effective, efficient and environmentally sound option is to take no action beyond surveillance.
3. Remote location. The proximity of mosquito larvae and adult populations to humans and domestic animals may in some cases allow for a no action pest management option. If larval or adult mosquitoes of species known to migrate only short distances are discovered in small enough quantities, the no action option may be appropriate.
4. "No Spray" Requests. Residents within the Pest Management Area may request that their property not have any pesticides applied to it. In such cases, provided that local, state and federal laws allow it, these requests will be honored. In cases where the public health is at risk or a significant source of nuisance mosquitoes is found to severely affect other residents, such requests may not be honored.

– **Prevention:** Prevention, while not defined in the PGP, is interpreted through standard Integrated Mosquito Management programs to mean Public Education and Outreach. By providing educational programming to local schools, civic organizations, and area events, VDCI informs residents about mosquito biology, mosquito-borne diseases, and personal protection. Our programs teach residents to help prevent mosquito problems in their area by eliminating any source of standing water on their property or in their neighborhood. Such public education (prevention) strategies are cost effective and environmentally friendly methods of mosquito control when used in conjunction with other pest management options. Such prevention programs are generally not an effective pest management option when used alone.

– **Mechanical/Physical Methods:** Mechanical/Physical Methods are defined as “mechanical tools or physical alterations of the environment, for pest prevention or removal”, which is very similar, and shares characteristics with Cultural Methods, as defined below. When taken in standard Integrated Mosquito Management context, Mechanical/Physical and Cultural Methods are considered Source Reduction techniques. Mechanical/Physical Methods may include any elimination of larval habitat such as emptying buckets, cleaning gutters, disposing of tires, or cleaning culverts. Such methods can be effective, environmentally friendly and cost effective, as part of an Integrated Mosquito Management Program, as in the given examples. Conversely, some may incur a high environmental impact with expensive costs, such as the dredging or draining of entire marshes. Typically, Mechanical/Physical Methods will only be utilized on a small scale, where the results are efficient, effective and provide little or no environmental impact.

– **Cultural Methods:** Cultural Methods are defined as “manipulation of the habitat to increase pest mortality by making the habitat less suitable to the pest”, and are considered to be a component of the Source Reduction portion of an Integrated Mosquito Management program. Cultural Methods are the manipulation of habitat such as cutting grass and trimming bushes to reduce the availability of harborage areas for adult mosquitoes. Such methods are not often utilized by VDCI personnel, but rather as part of a public education program where residents are encouraged to reduce the amount of potential mosquito habitat on their property. As such, Cultural Methods can be a cost effective, environmentally sound, and efficient means of getting positive public participation in the Integrated Mosquito Management program; however, they are generally not an effective pest management option when used alone.

– **Biological Control Agents:** Biological Control Agents are organisms that can be introduced into the environment to help control or reduce the pest population. Biological control of mosquitoes may include the introduction or propagation of naturally occurring organisms such as birds, bats, fish, dragonflies, copepods and cannibalistic mosquito larvae. The use of Biological Control Agents has been shown to have very limited effectiveness in most instances, and in some cases has had detrimental effects on the environment and non-target organisms. The introduction of non-native species such as *Gambusia affinis* (the mosquito fish) may be undertaken where appropriate and legal, and has been shown to be a fairly effective control option in small scale applications. However, in many areas, the introduction of such non-native species is illegal, and as such cannot be implemented. Native fish species, such as *Lepomis macrochirus* (Bluegill) may be utilized where appropriate, and legal, within the Pest Management Area. Both birds and bats have been proven to be ineffective control options for mosquitoes and will not be used in the Pest Management Area.

– **Pesticides:** The pesticides used in an Integrated Mosquito Management program are divided into two categories, Biological Pesticides and Chemical Pesticides. The biological pesticides used for larval

mosquito control are referred to as Biochemical Pesticides, and include bacterial larvicides, insect growth regulators and chitin synthesis inhibitors. Chemical pesticides are any other insecticide, used for larval or adult mosquito control, which is not categorized as a biological pesticide. Pesticides are an important pest management option used as part of an Integrated Mosquito Management program to control both larval and adult mosquitoes. When practicable, the use of biological larvicides is preferred due to their target specific nature and low environmental impact. VDCI uses only EPA registered and State approved insecticides. These products are applied only as directed by their respective labels, and all equipment used in this process is closely monitored and calibrated by staff.

Operators will consider impact to non-target organisms, impact to water quality, pest resistance, feasibility, and cost effectiveness when evaluating and selecting the most efficient and effective means of pest management to minimize pesticide discharge to waters of the State.

All mosquito control applications are guided by the Program's surveillance activities. When applied, the appropriate larvicide application rates and the frequency of the application are dependent on the results of site inspections. When the previously noted action thresholds are reached, larvicide applications may occur. Adulticide applications are also dependent upon the mosquito surveillance data as described above, combined with environmental variable such as weather conditions. When the previously noted action thresholds are reached, adulticide applications may occur. All pesticide label requirements are strictly followed.

VDCI only applies EPA and State approved pesticides labeled for the control of mosquitoes. All products are applied as per the label guidelines. Although every pesticide label has a range of application rates, VDCI generally applies the products at mid-label rates unless a lower dose is proven to be effective.

Below is a summary of the pesticides and their application rates most commonly used in the Pest Management Area:

	Brand Name	Active Ingredient	Formulation	Application Rate	Application Equipment
Larvicides	Altosid Briquet (2724-375)	(S)-Methoprene 8.62%	Briquet	1/catch basin or 1/100 ft ²	Hand
	Altosid XR Briquet (2724-421)	(S)-Methoprene 2.1%	Briquet	1/catch basin or 1/100 ft ²	Hand
	Altosid Pellet WSP (2724-448)	(S)-Methoprene 4.25%	Water Soluble Packet	1/catch basin or 1/100 ft ²	Hand
	Aquabac XT (62637-1)	<i>Bacillus thuringiensis israelensis</i> 8%	Liquid	0.5-1 pint/gl of water, 1 gl/A	High pressure diaphragm pump sprayer Backpack Sprayer Single Engine Aircraft, Flat Fan Nozzles
	Aquabac 200G (62637-3)	<i>Bacillus thuringiensis israelensis</i> 2.86%	Corn Cob Granule	5-15lbs/A	Hand Seeder Backpack Sprayer Single Engine Aircraft, Granule Spreader
	Fourstar Briquets 180 (83362-3)	<i>Bacillus thuringiensis israelensis</i> 1% <i>Bacillus sphaericus</i> 6%	Briquet	1/catch basin or 1/100 ft ²	Hand
	Spheratax SPH (84268-2)	<i>Bacillus sphaericus</i> 5%	Corn Cob Granule	5-15lbs/A	Hand Seeder Backpack Sprayer

	VectoBac 12AS (73049-38)	<i>Bacillus thuringiensis israelensis</i> 11.61%	Liquid	1 pint/gl of water, 10 gls/A	High pressure diaphragm pump sprayer
				1 pint 3 gls of water, 3 gls/A	Backpack Sprayer
	VectoMax CG (73049-429)	<i>Bacillus thuringiensis israelensis</i> 4.5%/ <i>Bacillus sphaericus</i> 2.7%	Corn Cob Granule	5-10 lbs/A	Hand Seeder
					Backpack Sprayer
	VectoMax WSP (73049-429)	<i>Bacillus thuringiensis israelensis</i> 4.5%/ <i>Bacillus sphaericus</i> 2.7%	Water Dispersible Granule	1/catch basin or 1/50 ft ²	Hand
	VectoLex WSP (73049-20)	<i>Bacillus sphaericus</i> 7.5%	Water Soluble Packet	1/catch basin or 1/50 ft ²	Hand
	VectoLex CG (73049-20)	<i>Bacillus sphaericus</i> 7.5%	Corn Cob Granule	5-10 lbs/A	Hand Seeder
					Backpack Sprayer
Pupicides	Agnique MMF (53263-28)	poly(oxy-1,2-ethanediyl)α-(C ₁₆₋₂₀ branched and linear alkyl)-ω-hydroxy	Liquid	0.25 to 0.5 gls/A	Hand Pump Sprayer
	Agnique MMF G (53263-30)	poly(oxy-1,2-ethanediyl)α-(C ₁₆₋₂₀ branched and linear alkyl)-ω-hydroxy	Granule	7 to 15 lbs/A	Backpack sprayer
Adulticides	AquaReslin (432-796)	Pyrethrins 20%, Piperonyl Butoxide 20%	Liquid	0.002 – 0.0035 lb A/I/A	ULV sprayer mounted on ATV
					ULV sprayer mounted on Truck
	Permanone 4-8 (432-1277)	Permethrin 4%, Piperonyl Butoxide 4%	Liquid	0.002 – 0.004 lb A/I/A	ULV sprayer mounted on ATV
					ULV sprayer mounted on Truck
					Aircraft with Micronair Rotary Nozzles
	Permanone 31-66 (432-1250)	Permethrin 31.28%, Piperonyl Butoxide 66%	Liquid	0.002 – 0.004 lb A/I/A	ULV sprayer mounted on ATV
					ULV sprayer mounted on Truck
					Aircraft with Micronair Rotary Nozzles
	Pyroicide 7396 (7396-902)	Pyrethrins 5%, Piperonyl Butoxide 25%	Liquid	0.001 – 0.0025 lb A/I/A	ULV sprayer mounted on Truck
					ULV sprayer mounted on Truck
	Scourge 18-54 (432-667)	Resmethrin 18%, Piperonyl Butoxide 54%	Liquid	0.001 – 0.035 lb A/I/A	ULV sprayer mounted on ATV
					ULV sprayer mounted on Truck
					Aircraft with Micronair Rotary Nozzles
	Suspend SC (432-763)	Deltamethrin 4.75%	Liquid	0.25-0.75 fl oz/gl	High pressure diaphragm pump sprayer
					Backpack Sprayer
	Zenivex E20 (2724-791)	Etofenprox 20%	Liquid	0.002 – 0.0035 lb A/I/A	ULV sprayer mounted on ATV
					ULV sprayer mounted on Truck

Summary of Pest Management Measures

- In order to meet the technology-based effluent limitations of the PGP, and to minimize the discharge of pesticides to Waters of the State from the application of pesticides, the following Pest Management Measures will be utilized within the Pest Management Area to control the target pests as listed.
- In all cases where pesticide applications to Waters of the State are appropriate, Operators will use only the amount of pesticide and frequency of pesticide application necessary to control the target pest, using equipment and application procedures appropriate for this task.
- At all times, pesticide application equipment will be maintained in proper operating condition in order to prevent leaks, spills, or other unintended discharges. This includes, at minimum, the annual calibration, routine maintenance, and regular cleaning of all pesticide application equipment. Inspection of application equipment will be conducted at the time of operation and any problems will be promptly reported and repaired prior to any further use of that piece of equipment.
- Prior to the implementation of any Pest Management Measure, Operators will assess the current weather conditions (e.g. temperature, precipitation and wind speed) in the treatment area to ensure the application is consistent with all applicable federal requirements. Short range weather forecasts for the Pest Management Area will also be monitored in order to ensure the efficacy of the chosen Pest Management Measure(s).
- As previously detailed in Section 3.2: Action Threshold(s), in order to reduce the impact on the environment and on non-target organisms, all Pest Management Measures will only be implemented after the relevant surveillance data has been assessed. This includes applying any pesticide that may result in a discharge to Waters of the State, only when the appropriate action threshold(s) has been met. Additionally, in situations or locations where practicable and feasible for efficacious control, VDCI will use larvicides as the preferred pesticides for mosquito or flying insect pest control. In situations or locations where larvicide use is not practicable or feasible for efficacious control, VDCI may use adulticides for mosquito or flying insect pest control when the adult action threshold(s) has been met.

Target Pest: Larval Mosquitoes

Larviciding

Control of larval mosquitoes will be implemented whenever and wherever it is determined that mosquito breeding has reached unacceptable levels. VDCI will apply only EPA and State registered public health pesticides labeled for mosquito control only after the appropriate Action Threshold has been met. All larviciding activities will be properly logged, marked with GPS units, and entered in VDCI's GIS database.

Source Reduction. Although VDCI does not normally attempt large drainage projects, we often work closely with local agencies in identifying and rectifying such drainage problems. Our technicians will conduct inspections as needed to reduce the production of urban mosquitoes (primarily *Culex* and *Aedes* species) by educating homeowners about identifying and removing mosquito production sources to control backyard production.

Biological Control of Larval Mosquitoes. Biological control of mosquitoes may include the introduction or propagation of naturally occurring organisms such as birds, bats, fish, dragonflies, copepods and cannibalistic mosquito larvae. The introduction of non-native species such as *Gambusia affinis* (the mosquito fish) or *Pimphales notatus* (fathead minnow) may be undertaken where appropriate and legal. In many areas, however, the introduction of such non-native species is illegal and as such cannot be implemented. Native fish species, such as *Lepomis macrochirus* (Bluegill) may be utilized where appropriate, and legal, within the Pest Management Area.

Pesticide Control of Larval Mosquitoes. Pesticides are used to control larval mosquitoes when and where biological control agents are not feasible. Our program relies on the use of two types of bio-rational pesticides: products that contain biological agents such as *Bacillus thuringiensis* var *israelensis* (Bti) and *Bacillus sphaericus* (Bs), and products that contain methoprene. The most widely used and environmentally sound biological agent in the US is Bti. This larvicide became commercially available in 1978 and has become the larvicide of choice by VDCI.

Methoprene, an insect growth regulator (IGR), may be used in certain mosquito-producing areas where extended control is desired. These areas can be treated on a 30 to 150 day schedule once positive production is found. Control of mosquitoes found in tire piles, catch basins and other permanent water sites can be treated using methoprene. Methoprene-based larvicides may be used in briquette, granular, or liquid forms depending upon treatment needs and habitat type.

When mosquito larvae are detected in an area, and source reduction is not feasible, they will preferentially be controlled through the application of Bti. Depending upon the conditions present, granular, liquid or time-release formulations may be applied and pose little threat of resistance development. In addition, Bs or combination Bti/Bs larvicide applications may be utilized if VDCI determines that the conditions warrant it.

All larviciding will be conducted using a variety of equipment and methods as follows:

1. **Hand-Held Tanks and Spreaders** are used where power equipment is unavailable or unnecessary. Tire piles, swimming pools, artificial containers, backyards, etc. will be treated with this type of equipment.
2. **Backpack Sprayers** are used in intermediate-sized treatment areas and areas that are not accessible to ATVs or trucks.
3. **Power Sprayers and Spreaders** are mounted on All Terrain Vehicles (ATV) or trucks. The chemical tanks hold from 5 to 100 gallons of pesticide. These mechanisms can be used with many types of larvicide and in most habitat types, such as ditches, swales, ponds, etc.
4. **Aerial Application**, as necessary, will be accomplished using a single engine aircraft when areas too large for other applications are involved. Pastures, orchards, rice fields, swamps and large backwater areas can be treated quickly and efficiently with the proper utilization of air power.

Control of Mosquito Pupae

Once a mosquito enters the pupal stage of its life cycle, most larvicides are no longer effective due to their respective modes of action. When mosquito pupae are located during inspections, VDCI will use Agnique MMF (Mono-molecular Film), in liquid or granular form, as its primary control product.

Target Pest: Adult Mosquitoes

Adulticiding

Chemical control of adult mosquitoes will be used whenever and wherever it is determined that the mosquito population has reached unacceptable levels and adult surveillance Action Threshold(s) have been met. Surveillance, source reduction, larviciding, and public education are used to reduce the quantity, and application frequency, of adulticides that are needed. However, the end result of integrated mosquito management is often the application of adulticides. VDCI applies only EPA and State registered public health pesticides that contain active ingredients labeled for mosquito control such as pyrethrin, resmethrin, permethrin, deltamethrin, bifenthrin and naled. All products applied for the control of adult mosquitoes will be approved and agreed upon by each government agency we work for.

Pesticides are mixed, and spray equipment calibrated, so that the proper application rates are consistently achieved. All hand-held, ATV-mounted, truck-mounted and aerial adulticide equipment is calibrated and droplet size (MMD) tests are conducted routinely to insure the most efficient kill rates with each application.

Ground Adulticiding

VDCI uses only the most up-to-date truck and ATV-mounted ULV application equipment. All trucks are equipped with GPS tracking units capable of delineating the spray routes of each vehicle. Detailed GIS maps, graphically illustrating the application data, are produced after each spray operation and included in our routine reports.

In addition to ULV adulticide applications, VDCI will also use “barrier” treatments to aid in the abatement of adult mosquitoes. Barrier treatments are the precise application of residual pesticides containing active ingredients labeled for mosquito control, such as deltamethrin and bifenthrin, to mosquito resting locations and harborage areas. These barrier applications are made by either hand held sprayers, or more often, through the use of backpack application equipment.

Aerial Adulticiding

In situations where large scale adult mosquito control is necessary, such as public health emergencies or extreme nuisance mosquito outbreaks, VDCI may conduct aerial adulticide applications with fixed-wing aircraft. VDCI's aerial personnel are trained to meet or exceed all applicable safety, operational and licensure requirements in accordance with the Federal Aviation Administration (FAA), Federal Environmental Protection Agency (EPA), and State and local agencies. All of VDCI's aircraft and aerial application equipment is maintained, calibrated, cleaned and repaired to the strictest standards in order to ensure the safety of our operators, residents and the environment. Night vision goggles are used by our flight crews on all nighttime spray missions.

SECTION 5: Response Procedures

5.1 *Spill Prevention and Response Procedures*

5.1.1 Spill Prevention

Spill prevention is prudent both economically and environmentally. Because of the potential exposure of employees and the environment to the pesticides we apply, VDCI implements safety procedures and protocols to minimize pesticide spills and exposure. These protocols include training of all applicators in equipment use, safety, and use of Personal Protective Equipment (PPE).

In an effort to prevent spills and other hazardous situations, all VDCI facilities, transportation vehicles and application equipment are routinely inspected. When loading, unloading or transferring hazardous materials, employees:

- a. Inspect drums, cartons and containers for leaks.
- b. Ensure all containers are labeled and have lids.
- c. Ensure all containers are placed within secondary containment when necessary.

Employee training includes the proper handling of hazardous substances, spill prevention, spill notification and spill clean up. Appropriate warning signs are posted in storage areas containing pesticides and on all vehicles used to transport pesticides. At all times, hazardous materials are stored in their proper labeled containers and regularly checked for signs of damage and/or leaks. Pesticide containers are stored in secondary containment where a spill would be contained and would not be able to run off an impervious surface, such as asphalt or concrete on to pervious surfaces such as gravel, dirt or grass.

5.1.2 Spill Response

All employees are trained annually on spill prevention and response as detailed in VDCI's Health and Safety Plan, Sections 2.2 Health and Safety Training, 2.3 Personal Protective Equipment, 2.4 Other Safety Equipment, 2.6 Loading and Filling Operations, and 2.7 Pesticide Spill Cleanup. All spills should be immediately isolated to the smallest possible area.

Large leaks, spills, or other release into waters of the State are considered to be the accidental discharge of any pesticide in Reportable Quantities as established under either 40 CFR Part 110, 40 CFR Part 11 7, or 40 CFR Part 302 occurs in any 24-hour period. Generally, all spills are reportable if there is any potential for harm to human health or the environment from the spill, or if the spill occurs in an area frequented by the public. In the instance of a Reportable Spill in accordance with the requirements of 40 CFR Part 11 0,40 CFR Part 11 7, and 40 CFR Part 302, technicians will contact 911 to notify Hazmat Unit; contact VDCI's Safety Director at (318) 372-4073; wear protective clothing as indicated on the pesticide label; isolate the contaminated area and keep people away; and wait for Hazmat Unit to arrive.

Small spills are generally considered to be the accidental discharge of any pesticide in non-reportable quantities. A spill is typically not reportable when it does not result in pesticide lost to the environment, and

there is no threat to air, soil, or water, such as when it occurs on a concrete floor, or in an enclosed area, and can be removed by proper spill clean-up procedures. In these instances, spills will be remediated using the following procedures: Technicians will wear protective clothing indicated on the pesticide label during the entire cleaning process; Isolate the contaminated area and keep people away from the spill; Soak up the spill by spreading an absorbent material (e.g., vermiculite) over the entire spill; Collect all contaminated materials and place them into labeled heavy duty hazardous materials bags for disposal; Clean area with water and detergent and remove residues with additional absorbent material which is placed in labeled hazardous materials bags; Decontaminate the area using chemical wipes and place used wipes in labeled hazardous materials bags; Clean up contaminated vehicles and equipment; Dispose of all contaminated materials in labeled hazardous materials bags.

5.1.3 Spill Notification

As detailed in VDCI's Health and Safety Plan, Section 2.7 Pesticide Spill Cleanup, all spills will be reported to the Contract Supervisor and all spills of reportable size will be reported to the VDCI Safety Director who will either report the spill to all appropriate agencies personally, or will direct the supervisor on-site to do so. In the state of Illinois, spills of reportable size (pursuant to either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302), will be reported in accordance with the requirements of 40 CFR Part 110, 40 CFR Part 117, and 40 CFR Part 302 immediately to:

- National Response Center (NRC) at 1-800-424-8802
- Tennessee Environmental Safety and Management at 606-682-4176
- Tennessee Emergency Management Agency (TEMA) at 800-262-3300 or 800-262-3400 (non-emergencies)

Additionally, in any emergency situation, all employees are trained to call 911 immediately.

5.2 Adverse Incident Response Procedures

5.2.1 Responding to an Adverse Incident

An Adverse Incident is when non-target plants, animals or wildlife in waters of the US suffer a toxic or adverse effect as a result of exposure to a pesticide application. Toxic or adverse effects include effects that are not identified or described on the pesticide product label or are not expected to be present.

Although some degree of impact to non-target species may occur and may be acceptable during the course of normal pesticide application, immediately observable signs of distress or damage to non-target plants, animals and other macro-organisms within the treatment area may warrant concern for a possible adverse incident related to a discharge of pesticides during the application. During a visual inspection, Operators will look for distressed or dead juvenile and small fish, washed up or floating fish, fish swimming abnormally or erratically, fish lying lethargically at the water surface or in shallow water, fish that are listless or nonresponsive to disturbance, the stunting, wilting, or desiccation of non-target submerged or emergent

aquatic plants, and other dead or visibly distressed non-target organisms including amphibians, turtles, and macro-invertebrates. These observations will be noted unless they are deemed not to be aberrant.

In the event an applicator observes or is made aware of an Adverse Incident that may have resulted from the application of their pesticide application, they will immediately notify the appropriate individuals, as outlined in Section 5.2.2 and complete an Adverse Incident Report (see Attachment D).

5.2.2 Notification of an Adverse Incident

Upon observing or being made aware of an Adverse Incident, the following information will be immediately noted and reported:

- The caller's name and telephone number.
- Permittee name and mailing address.
- Permit number from Notice of Intent
- The name and telephone number of a contact person.
- How and when you became aware of the Adverse Incident.
- Description of the Adverse Incident identified and the location.
- The U.S. EPA pesticide registration number for each product applied in the area of the Adverse Incident.
- Description of any steps taken or to be taken to correct, repair, remedy, clean up or otherwise address any adverse effects.

Adverse Incident Contact List:

1. Internal Decision-maker:

Company or Organization Name: Vector Disease Control International, LLC
Name: Earnest English
Address: 65 Peden Road
City, State, Zip Code: Marion, AR 72364
Telephone Number: 800-413-4445
Email address: westmemphis@vdcnet.net
Fax number: 866-839-8595

2. Permitting Agency:

Company or Organization Name: Tennessee Department of Environment & Conservation
Name: Jim McAdoo
Address: 401 Church St.; 6th Floor, L&C Annex
City, State, Zip Code: Nashville, TN 37243-1534
Telephone Number: 615-532-0684
Email address: jim.mcadoo@state.tn.us
Fax number: 615-532-0686

3. Hazardous Chemical Responder:

Company or Organization Name: Office of Emergency Management
Name: Arthur Rhea
Address: 310 South Main Street; P.O. Box 905
City, State, Zip Code: Somerville, TN 38068
Telephone Number: 901-465-3567
Email address: fcfalcon@bellsouth.net
Fax number: 901-465-3568

4. Emergency Medical Facility:

Company or Organization Name: Baptist Memorial Hospital-Collierville
Name:
Address: 1500 W. Poplar Ave.
City, State, Zip Code: Collierville, TN 38017
Telephone Number: 901-861-9000
Email address:
Fax number:

5.3 Pesticide Application Equipment Maintenance

To ensure all VDCI's surveillance and application equipment, vehicles, and aircraft are properly functioning, routine maintenance is performed on each unit as required by the manufacturer. VDCI employs multiple individuals that are capable of servicing all application equipment and vehicles. In addition, we have two (2) full-time Inspection Authorization (IA) mechanics capable of servicing all our aircraft.

Each spring, all handheld, backpack, ATV and truck-mounted equipment is inspected, repaired and calibrated for flow rate. In addition, all ULV equipment is calibrated for droplet size. As needed throughout the application season, typically when there is a change in products or application rate being applied, spray units are re-calibrated. Routine vehicle and sprayer inspections throughout the season are designed to detect any improperly working equipment. All application vehicles are washed weekly.

All aircraft are certified as air-worthy by the FAA. Maintenance inspections are conducted regularly as required by Federal Aviation Regulations. These inspections include, but are not necessarily limited to: 100 hour inspections, and annual inspection. Prior to and during all aerial applications, pilots inspect the aircraft and application equipment. Any discrepancies noticed are reported to the Chief Pilot and Director of Maintenance for repair. All application aircraft are washed weekly.

5.4 Pest Surveillance

The Program will use larval dip counts along with CDC light traps, gravid traps, landing rates, disease testing and resident service requests to determine when the action thresholds have been met, to develop a true picture of the current mosquito population dynamics, and to determine which Pest Management Measures to implement. The following is a general description of surveillance methods typically employed by our Integrated Mosquito Management Program for all pre- and post-application data.

Larval Mosquito Surveillance

The following larval habitats will be inspected regularly by the District with larval dip counts, using standard 300 ml dippers, and mapped into a GIS database using GPS technology to determine if the established Action Thresholds for larval mosquito control have been reached within the Pest Management Area.

Permanent Water sites, including semi-permanent water sites, consist of habitat that remains inundated for an extended period of time. Examples of these sites would be lakes, rivers, retention ponds, swamps, marshes, etc. Permanent water sites will be inspected on a routine basis throughout the mosquito breeding season.

Temporary Floodwater is standing water that may exist for short periods of time after high water or rainfall. Examples of this type of habitat include floodplains, bottom lands, woodland pools, swales (low areas), irrigated pastures, drainage ditches, and tire ruts. These areas will be inspected for the presence of larvae as soon as possible after every substantial rainfall throughout the mosquito breeding season.

Artificial Containers/Tree Holes are considered one of the most troublesome problems faced by a mosquito control operation. Old tires, cans, bottles, buckets, cups, pet water bowls, birdbaths, gutters, and swimming pools are some of the more common artificial containers. As private and public properties are inspected, container habitats will be checked and treated, emptied, or removed as needed.

Septic Water Habitats occur when water holding areas become polluted with high levels of organic matter. Examples of this type habitat would include oxidation ponds, ditches with sewage or septic discharge, and waste-water treatment plants. Routine management of this habitat type enhances the control of many arboviral vector species and will be conducted throughout the mosquito season.

Adult Mosquito Surveillance

Surveillance of adult mosquitoes includes several methods of collection to sample for nocturnal, diurnal, and crepuscular species. Adult mosquito surveillance helps to elucidate the mosquito distribution, density, and species composition throughout the Pest Management Area. Furthermore, it can provide direct evidence of an increased risk of contracting mosquito-borne viruses. It is also crucial for the efficient and precise application of adulticides. All mosquito species found in an area may not be attracted to the same type of traps, therefore, a combination of techniques may be used throughout the Pest Management Area. All adult mosquito surveillance activities are mapped into a GIS database using GPS technology. The following adult surveillance techniques will be used by the District to determine if Action Thresholds for adult mosquitoes have been reached within the Pest Management Area:

CDC (Centers for Disease Control) Miniature Light Traps are lightweight, portable, battery operated traps that will be used throughout the mosquito management area to assess local adult mosquito population abundance. These traps are baited with dry ice (a source of CO₂) to increase their appeal to host-seeking mosquitoes and will be sampled weekly throughout the mosquito season. This is the most common type of trap used as it attracts the largest variety of mosquito species.

Gravid Traps are lightweight, portable, battery operated traps that use putrid water as an attractant for certain species of ovipositing mosquitoes. Where appropriate, these traps are used to identify population dynamics of certain *Culex* mosquito species, such as *Culex pipiens*, which are common vector species for West Nile virus in North America. These traps, when used, are sampled weekly throughout the mosquito breeding season.

New Jersey Light Traps are semi-permanently placed traps powered by 110-volt household current. NJ Light traps are used to provide rapid information on mosquito abundance and species composition within the Pest Management Area which is used for planning and directing day-to-day mosquito control activities. NJ light traps may be set throughout the Pest Management Area primarily in urban areas. These traps, when used, are sampled weekly from mid-May through October.

Landing Rates are performed by inspectors and are instrumental in determining which species of mosquitoes are actively feeding on humans in an area. Inspectors establish areas throughout

the management area where they can expose themselves as bait and count the number of mosquitoes landing on them in a given period of time (usually one to ten minutes). These counts will be conducted as needed (a.m. or p.m.) throughout the mosquito season.

Disease Surveillance & Response

Sorting and identification of the mosquitoes collected in the CDC light traps and the gravid traps will be conducted by District staff. In addition, VDCI will test all *Culex spp.* mosquito pools, in numbers greater than five (5), for the presence of West Nile virus using the Rapid Analyte Measurement Platform (RAMP) bioassay and if positive pools are detected, they may be sent to the Illinois State Department of Health Laboratories for further testing using their RT-PCR equipment. Test results will be a primary factor in determining if an action threshold has been met and what the appropriate Pest Management Measures will be.

Contact will be maintained with local, tribal, state and federal health agencies in order to project potential public health concerns. Any finding of local significance will be immediately reported to the all appropriate government officials. The Program will work closely with all appropriate agencies to implement the most effective response to any findings of mosquito-borne diseases within the mosquito management area. The presence of mosquito-borne pathogens will meet the Action Threshold for mosquito control activity and will result in the implementation of one or more Pest Management Measures, as determined on a case by case basis.

Service Requests

The public is always encouraged to call the District's local offices, or log onto District's website and report service requests to our Integrated Mosquito Management Programs. All service calls will be recorded and used to help identify mosquito problem areas. In each instance of a call, an Inspector will be dispatched to the area within 24 hours and all appropriate Pest Management Measures will be taken, ranging from removal of tires and other debris to applying larvicides or adulticides when necessary, provided that one or more Action Thresholds have been met. The number of Service Requests received in a given area will be regarded as an Action Threshold, as previously detailed. In Service Request situations where the appropriate Pest Management Measure(s) will not affect waters of the United States, no Action Threshold is necessary.

Additionally, service calls requesting that an area not be treated for larval or adult mosquitoes will be recorded and documented as "No Spray Zones". Registered organic farms and apiaries, who contact the District, will be eliminated from pesticide application activities. These "No Spray Zones" will be treated with a "No Action" Pest Management Option whenever possible, within the scope of all local, state and federal laws. However, should vector-borne diseases, such as West Nile Virus, be detected in a particular area, "no spray" requests may not be honored if the public's health is at risk.

5.5 *Pesticide Monitoring Schedules and Procedures*

During any pesticide application, all Operators will monitor the amount of pesticide applied to ensure that they are using the lowest amount to effectively control the pest, consistent with reducing the potential for development of pest resistance. They will also monitor the pesticide application to ensure that the application equipment is in proper operating condition to reduce the potential for leaks, spills, or other unintended discharge of pesticides to surface waters of the State. Additionally, they will monitor the pesticide application to ensure that the application equipment is in proper operating condition by adhering to any manufacturer's conditions and industry practices, and by calibrating, cleaning, and repairing equipment on a regular basis.

During any pesticide application, or post-application surveillance, all Operators will, when considerations for safety and feasibility allow, visually assess the area to and around where pesticides are being, or have been, applied for possible and observable adverse incidents caused by application of pesticides, including the unanticipated death or distress of non-target organisms and disruption of wildlife habitat, recreational or municipal water use.

In the event an applicator observes or is made aware of any incidents of noncompliance that may have resulted from the application of their pesticide application, they will immediately notify the appropriate individuals, as outlined in Section 5.2.2 and complete a Corrective Action Log (see Attachment E) or an Adverse Incident Report (see Attachment D) as required.

SECTION 6: Protection of Endangered Species

There is one (1) Endangered Species within the Pest Management Area:

The Indiana bat (*Myotis sodalis*) is considered an Endangered Species within Fayette County, TN. It is a rare species, and is listed on both the state and federal endangered species list. It was not until 1974 that the first maternity colony was discovered in Indiana. Like little brown bats (to which they bear a close resemblance), Indiana bats migrate to caves south of Ohio and Indiana to hibernate. Indiana bats are quite small, weighing only one-quarter of an ounce although in flight they have a wingspan of 9 to 11 inches. Their fur is dark-brown to black. During summer they roost under the peeling bark of dead and dying trees. Indiana bats eat a variety of flying insects found along rivers or lakes and in uplands

In an effort to minimize effects to all non-target organisms including the Endangered Species listed above, every effort will be made to conduct applications when conditions are most favorable for mosquito control. Climatic conditions are always checked prior to any aerial or ground application. Wind speed, wind direction, air temperature, and the possibility of impending rain must be taken into consideration whether applying liquid or granular products because of drift, dilution, or chemical breakdown depending on the product being used.

6.1 *Ground Larvicide Considerations*

All label restrictions are followed for the product being use. Two major environmental considerations are tree canopy and the amount of aquatic vegetation present within the treatment site. Tree canopy may deflect or otherwise prevent the penetration of pesticide from reaching the target area; whereas, heavy vegetation within a wetland can interfere with the migration of the larviciding agent through the water column.

6.2 *Ground Adulticide Considerations*

All label restrictions are followed for the product being use. Applications are made when the target mosquitoes are most active and meteorological conditions are conducive to keeping the spray cloud in the air column and close to the ground. Typically, when ground wind speeds are in excess of 10mph and/or rain is occurring or imminent, applications are postponed. No applications are conducted when ambient air temperatures fall below 50° F.

6.3 *Aerial Adulticide Considerations*

All label restrictions are followed for the product being use. Applications are made when the target mosquitoes are most active and meteorological conditions are conducive to keeping the spray cloud in the air column and close to the ground. Typically, when ground wind speeds are in excess of 10mph and/or rain is occurring or imminent, applications are postponed. No applications are conducted when ambient air temperatures fall below 50° F.

During the aerial spray missions, VDCI's aircraft have the ability to receive via an AIMMS-20 Weather monitoring system real-time meteorological conditions at release height into the aircraft, data specifically recorded includes: temperature, wind speed, wind direction, and humidity.

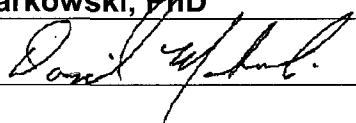
SECTION 7: Plan Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: **Daniel Markowski, PhD**

Title: **Vice-President**

Signature: _____



Date: 4/12/2012

SECTION 8: PDMP Plan Modifications

This Pesticide Discharge Management Plan (PDMP) will be modified when necessary to address any of the triggering conditions for corrective action or when a change in pest control activities significantly changes the type or quantity of pesticides discharged, such as timing of the project, changes in personnel, updates to site maps, etc. Changes to the PDMP will be made before the next pesticide application that results in a discharge, if possible, or if not, no later than 90 days after any change in pesticide application activities. *The revised PDMP will be signed and dated.*

Reference Attachment E, F, I and/or J.

SECTION 9: PDMP Availability

A copy of the current PDMP, along with all supporting maps and documents, will be retained on file at the address provided on the cover of this document.

The PDMP and all supporting documents will be readily available and provided to, upon request, and copies of any of these documents provided, upon request, to EPA; a State, Territorial, Tribal, or local agency governing discharges or pesticide applications within their respective jurisdictions; and representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).

Certain Confidential Business Information (CBI), as defined in 40 CFR Part 2, may be withheld from the public provided that a claim of confidentiality is properly asserted and documented in accordance with 40 CFR Part 2; however, CBI must be submitted to the division, if requested, and may not be withheld from those staff within the division.

ATTACHMENTS

Attachment A – General Location Map

Attachment B – Pesticide General Permit

Attachment C – NOI and Acknowledgement Letter from EPA/State

Attachment D – Adverse Incident Report

Attachment E – Corrective Action Log

Attachment F – PDMP Amendment Log

Attachment G – Subcontractor Certifications/Agreements

Attachment H – Delegation of Authority

Attachment J – Seasonal Applicators

Attachment I – Annual Reports and Other Record Keeping

Attachment A – General Location Map

Attachment B – Pesticide General Permit

Attachment C – NOI and Acknowledgement Letter from State

Attachment D – Adverse Incident Report

Attachment E – Corrective Action Log

Project Name:

PDMP Contact:

Date	Description of Problem triggering the Corrective Action	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

Attachment F – PDMP Amendment Log

Project Name:
PDMP Contact:

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Attachment G – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION PESTICIDE DISCHARGE MANAGEMENT PLAN

Project Number: _____

Project Name: _____

Decision-maker(s): _____

As a subcontractor, you are required to comply with the Pesticide Discharge Management Plan (PDMP) for any work that you perform for the above designated project. Any person or group who violates any condition of the PDMP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the PDMP. A copy of the PDMP is available for your review.

Each subcontractor engaged in pesticide activities in the pest management area that could impact Waters of the United States must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the PDMP for the above designated project.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of pesticide application service to be provided: _____

Signature: _____

Title: _____

Date: _____

Attachment H – Delegation of Authority Form

Delegation of Authority

I, **Austin Edmondson, Jr.** (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Pesticide General Permit, for the **Town of Somerville Mosquito Control Program** project. The designee(s) is authorized to sign any reports, other documents required by the permit.

<u>Earnest English</u>	<u>Daniel Markowski, PhD</u>
<u>Vector Disease Control International, LLC</u>	<u>Vector Disease Control International, LLC</u>
<u>65 Peden Road</u>	<u>1320 Brookwood Drive, Suite H</u>
<u>Marion, AR 72364</u>	<u>Little Rock, AR 72202</u>
<u>800-413-4445</u>	<u>800-413-4445</u>


By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix B, Subsection B.11.A of the Pesticide General Permit (PGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix B, Subsection B.11.A.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the pest management area, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: **Austin Edmondson, Jr.**

Company: **Town of Somerville**

Title: **City Administrator**

Signature: 

Date: **4/16/2012**

Attachment I – Seasonal Applicators

The Program hires seasonal, part-time applicators which change from year to year throughout the active mosquito-breeding season. Each year, the list of seasonal applicators will be updated and a copy maintained, on file, with the PDMP.

The following is a list of current seasonal applicators:

Applicator	Current License No.	State
<i>Office:</i> Vector Disease Control International 65 Peden Road Marion, AR 72364		TN

Attachment J – Annual Reports and Other Record Keeping

The following is a list of records you should keep at your site and available for inspectors to review:

- Copies of Annual Reports
- Records as required in PGP Part 7, Record Keeping and Annual Reporting